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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

NEWS LETTER

FOR AUGUST 1938

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DR. L. O. HOWARD HONORED IN MEXICO

On September 3, 1938, ceremonies were held in Mexico City dedicating the Leland Ossian Howard Entomological Laboratory of the National Polytechnic Institute of Mexico. American Ambassador Daniels presented one of the principal addresses on this occasion. He said in part: "I regard it as both an honor and a privilege to speak for my countrymen on the occasion when Mexican men of letters and scientific attainment have given a signal token of esteem and appreciation to a distinguished American scientist. It is rare that any nation bestows permanent distinction to a great man of another country by giving his name to one of its buildings. In this act Mexico records its acknowledgment, in its National Polytechnic Institute, that scientific discoveries are the possession of all men in every clime, and makes this recognition in the most enduring and visible form.

"Conferring the name Howard upon your entomological laboratory is but one of many significant acts which bind Mexico and the United States together in common devotion to culture and science. The stronger these mutual bonds, the surer is the spirit of the Good Neighbor advanced and undergirded on both sides of the Rio Grande."

FRUIT INSECT INVESTIGATIONS

Plum curculio enters hibernation by midsummer.--As jarring peach trees after harvest in 1935 and 1936 for marked curculios and diligent searches under peach trees and around the border of peach orchards during the late summers of 1936 and 1937 failed to locate plum curculio adults, Oliver I. Snapp and J. R. Thomson, Jr., undertook an investigation at Fort Valley, Ga., this year to determine definitely where the curculio is after the harvest of the last maturing variety of peach in that locality. About 1 month after harvest a quantity of fallen leaves was raked up from a hedge row bordering an Elberta peach orchard in which the population of new (first-generation) curculios had been very heavy during peach harvest. Examination of this debris yielded a number of curculio adults, indicating that adults of this insect begin to enter hibernation in midsummer in central Georgia, within a month after the completion of peach harvest. This is the reason why in some years very few curculios are found on peach trees shortly after harvest.

Survival of Japanese beetle eggs and larvae in commercial molding sands.--I. M. Hawley has reported on some studies at the Moorestown, N. J., laboratory, to determine whether Japanese beetle eggs could hatch and the larvae survive in various types of moist molding sand handled under commercial conditions. These types of molding sand ordinarily are free from organic or vegetable matter. Of 1,400 eggs under observation in the several types of molding sand, 1,110 hatched. Of the 1,110 larvae obtained, only 27 were alive at the time of the first examination, made 8 to 11 days after the eggs hatched and at the time of the second examination, made 13 to 16 days after the eggs had hatched, none of the 27 were alive. None of the larvae ever developed to the point of transforming to the second instar. It is evident that, although eggs will hatch in the several types of molding sand tested and the larvae will live for a relatively short time, the absence of organic matter suitable for larval food prevents extended development.

Colonization of Japanese beetle parasite.--At the Japanese beetle laboratory at Moorestown during August a total of 9,539 females of the Koiwai strain of Tiphia popilliavora Roh., an imported hymenopterous parasite, were collected in the field. This material was used to form 94 colonies, each consisting of 100 mated females. These colonies were liberated in the areas heavily infested by the Japanese beetle, as follows: 64 colonies in Maryland, 18 colonies in Connecticut, and 12 colonies in Westchester County, N. Y. This parasite belongs to the digger-wasp group and attacks the Japanese beetle in the larval stage in the soil. In addition, seven colonies of reared mated females of the Korean strain of T. popilliavora, each colony consisting of 100 individuals, were liberated in Pennsylvania.

Flight of the saw-toothed grain beetle.--It is generally believed that Oryzaephilus surinamensis (L.) cannot fly. As this is by far the most numerous insect in stored raisins the year following harvest, the laboratory at Fresno has been making observations in a raisin-storage yard by means of a rotary net to determine definitely, if possible, the inability of the insect to fly. This point is important because if the species cannot spread by flight, barriers can be used to keep it out of raisins that have been cleaned by means of the raisin-cleaning machine developed at the laboratory. Catches collected daily, with a few exceptions, from April 14 to August 31 have contained saw-toothed grain beetles as follows, according to records made by Dwight F. Barnes and George H. Kaloostian: April, 0; May, 1; June, 0; July, 20; August, 151. When compared with the enormous numbers of saw-toothed grain beetles in raisins stored in open-sided stacks in the yard where the net is being operated, the above figures are negligible, but they do indicate that a very small percentage of the beetles move through the air, probably by use of their wings rather than by drifting in air currents.

MEXICAN FRUIT FLY CONTROL

Insect populations ebb in lower Rio Grande Valley.--There was a decided reduction in the number of insects taken in traps during August. The high fly population present in Laredo and Matamoros during June and July reached a very low ebb soon after the first of the month. Throughout the latter half of August no *Anastrepha ludens* Loew were taken there. In the lower part of the valley a limited number of *Anastrepha* spp. were trapped. The Mexican fruit fly, however, was not present in these collections. All indications point to another bumper citrus crop. Rains during the last week in August have started the fruit to growing and will cause it to size earlier. Estimates made by various agencies place the probable production in excess of 42,000 equivalent carloads. Results of trapping and fruit examination are summarized in the attached tables.

Species	Texas	Mexico
Adults trapped		
A. ludens	*2	16
A. serpentina Wied	9	0
A. spp. "L"	5	2
A. sp. "n sp."	1	0
A. pallens Coq	205	80
Total	222	98
Larvae collected		
A. ludens	0	97
A. serpentina	0	57
A. sp. not ludens	0	1,137
Total	0	1,291

*Not in regulated area.

CEREAL AND FORAGE INSECT INVESTIGATIONS

Three generations of European corn borer observed in southern New Jersey.--C. A. Clark, Moorestown, N. J., says it has been established definitely that the European corn borer can produce at least a partial third generation annually in southern New Jersey. This information was obtained from frequent and extensive field observations, supplemented by plot studies at the Moorestown laboratory in 1938. The oviposition period of the second generation in New Jersey this year extended from July 25 to August 20, with the peak of egg deposition occurring during the last 3 days in July. Pupation of the second generation reached 12 percent in some fields by August 23. Moth emergence had started and fresh eggs of the third generation were also found on that date.

High infestation of corn borer in New Jersey.-- Mr. Clark reports that a large number of fields of sweet and field corn are very heavily infested by the European corn borer in New Jersey again this year. One

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10-acre field of dent corn, examined near Hightstown, averaged 34 borers per plant, with every plant infested. Fields with an average infestation of 10-15 borers per plant are common.

Imported parasites of corn borer well established and spreading in Eastern States.--Mr. Clark says that at the close of 1937 five larval parasites of Pyrausta nubilalis Hbn., imported from Europe and the Orient, have become established in the eastern portions of the territory infested by the European corn borer and that four of these species had spread over a considerable area. The tachinid Lydella grisescens R. D. was found over an area of at least 837 square miles and the ichneumonid Inareolata punctoria Roman. had dispersed over an area of not less than 756 square miles. The polyembryonic braconid Macrocentrus gifuensis Ashm. continued to increase rapidly in numbers and this parasite had become present in an area of over 278 square miles in southeastern Massachusetts. Chelonus annulipes Wesm., a braconid which attacks the eggs of the borer and subsequently destroys the host larva, was recovered from an area of 85 square miles, although it is probably present over a much larger area. The ichneumonid Cremastus flavoorbitalis (Cameron) maintained itself in Massachusetts but failed to increase in measurable numbers. A maximum parasitization by all species of 56.3 percent was recorded from one collection of borer larvae made at Taunton, Mass., in the fall of 1937. In order to obtain the above data on establishment and spread of parasites, collections totaling 21,190 larvae of the corn borer from Massachusetts, Rhode Island, Connecticut, New Jersey, and Virginia were reared.

Midsummer pupation of European corn borer in early sweet corn.--A. M. Vance, Toledo, Ohio, reports that pupation of the corn borer in early market sweet corn near Toledo late in July and early August averaged 11.3 percent, according to random counts, involving 4,398 individuals, taken in the course of an infestation survey of 25 fields. On the basis of comparable data, midsummer pupation in early sweet corn in the same section in 1936 and 1937 was significantly less, averaging 6.2 and 8.7 percent for the 2 years, respectively. Pupation occurred in all 25 fields examined in 1938, ranging in individual fields from a minimum of 4 to a maximum of 24 percent. In 8 fields of early sweet corn surveyed near Sandusky, Ohio, August 2-3, a total of 994 individuals were examined and an average of 6.3 percent pupation found. L. A. Carruth, of the Geneva, N. Y., Agricultural Experiment Station, furnished data taken July 22-30 in New York State, which indicated percentages of pupation averaging 11.9 (for 7 fields), 7.6 (for 12 fields), and 6.9 (for 8 fields), in early sweet corn grown in Schenectady, Albany, and Columbia Counties, respectively. The above data are evidence of a partial second generation of the corn borer in 1938 in portions of the Lake States area.

Susceptible modifiers evident in wheat found resistant to hessian fly.--W. B. Cartwright, Lafayette, Ind., reports that a hybrid F_2 family representing a cross of Ill. No. 1, W 38, a strain resistant to hessian fly, with Dawson, a susceptible variety, has shown an excessive number of plants susceptible to fly in a greenhouse test at Lafayette. This is believed to indicate that the resistance of Ill. No. 1, W 38 is modified by susceptible genes. Susceptibility is reflected also in the population of flies established in individual hybrid plants in the same test, as indicated below.

Parents and hybrid	Plants infested	Average fly larvae per infested plant
	Percent	Number
Ill. No. 1, W 38	57	5.7
Dawson, C. I. 3342	100	8.4
Dawson x Ill. No. 1, W 38, F_2	85	8.0

High type of resistance to hessian fly recorded for wheat strain FPI 94587.--Mr. Cartwright also reports that foreign plant introduction No. 94587, a durum wheat, has not deviated from zero plant infestation to hessian fly in tests at Lafayette in 1938. In contrast, other resistant wheats, as Ill. No. 1, W 38, Java C. I. 10051, and Marquillo C. I. 6887, have shown a marked decline or unstableness of resistance when small endosperm seedlings were subjected to the fly in greenhouse tests. The contrast of F. P. I. 94587 with other resistant types in 1938 is shown more fully in the summary below.

Variety or strain	Apr.-May field test, plants infested	May-June greenhouse test, plants infested	July-August greenhouse test, plants infested
	Percent	Percent	Percent
Acme	6	--	100
F. P. I. 94587	0	--	0
Ill. No. 1 x (NorkaxCarina)	0	--	85
Ill. No. 1, W 38	0	15	57
Java, C. I. 10051	4	71	59
Marvel, C. I. 8876	2	78	69
Marquillo, C. I. 6887	2	61	90
Thatcher, C. I. 10003 (Susceptible check)	65	100	100

Cube dust (rotenone 5 percent, other ether extracts 10 percent) not effective against alfalfa caterpillar.--L. G. Jones, Sacramento, Calif., reports laboratory and field tests completed during the period July 20 to August 10, with cube dust applied to growing alfalfa at the rate of 40 pounds per acre (rotenone 0.32-5.0 percent) disclosed that rotenone did not cause satisfactory mortality of all larval instars and of pupae of the alfalfa caterpillar. In these tests the cube dust or concentrate was diluted with varying percentages of talc, sulphur, and wheat flour. No kill was noted in any rotenone combination with these materials nor from the undiluted cube (5-percent rotenone) dust.

High yield of grain by fly-resistant and rust-resistant Marquillo-winter wheat hybrids.--E. T. Jones, Manhattan, Kans., reports that preliminary yield tests involving 166 promising winter wheats have been completed by J. H. Parker, agronomist at the Kansas experiment station. Four

F_6 hessian fly and rust-resistant Marquillo-winter wheat hybrids included in this test and developed in a joint project with the Kansas Experiment Station and the Bureau of Plant Industry, gave relatively high yields of grain. Three different selections of Marquillo x Oro ranked fourth, sixth, and seventh, with yields of 39.8, 39.4, and 39.2 bushels per acre. A selection of Marquillo x Tenmarq yielded 35.8 bushels per acre and ranked thirteenth in this test, where the highest yielding variety, Hope x Kawvale, produced 45 bushels per acre. Grain produced by the Marquillo hybrids appeared to be of high quality and good type.

The devastating grasshopper widespread in California.--C. C. Wilson, Sacramento, Calif., reports that Melanoplus devastator Scudd. has spread from the foothill-grass land, its natural habitat, into grain fields and into adjacent cultivated crops until at present it has invaded from 5 million to 8 million acres of territory. The infestation is general throughout the grazing lands in the foothills, both east and west of the Sierra Nevada Mountains, and also thousands of acres are infested in Siskiyou, San Luis Obispo, Santa Barbara, Ventura, and Los Angeles Counties. In Kern County alone more than a million acres are infested by the devastating grasshopper. The density of grasshopper population averaged 27 per square yard in many areas of 5 to 5,000 acres; however, in general it averaged from 1 to 5 per square yard. Damage has been confined largely to the range grasses, although in some instances fruit and shade trees have been defoliated and crops adjacent to heavily infested range lands slightly damaged.

JAPANESE BEETLE CONTROL

More Dutch elm disease confirmations in Dutchess County, N. Y.--In the newly discovered infected region of Dutchess County six infected trees were discovered in August, the first in Pleasant Valley Township, about 2½ miles northeast of the confirmed elms previously located west of Netherwood, N. Y. In Lagrange Township a second confirmation, discovered by the autogiro, is located on the east bank of Wappinger Creek, slightly over ½ mile north of the main line of the railroad at Arlington, N. J. The third confirmation, a first find in Clinton Township, is located about ½ mile north of Schultzville. The other three in Dutchess County were found in Hyde Park. One is located a few hundred feet north of a recent confirmation on a nearby estate. The rapid spread of disease in Dutchess County probably may be attributed to the general use of dead elm for fuelwood. Inspection of one pile of firewood revealed that half of it was elm, covered with bark-beetle galleries.

Dutch elm disease infections in Connecticut.--Confirmation of a diseased case in Danbury, Fairfield County, the first in that town, added 45.38 square miles to the infected zone and 19.92 square miles in the town of Brookfield to the protective area. A later first confirmation of a Graphium case in North Branford Township, New Haven County, added 25.78 square miles to the infected zone and 37.40 square miles to the protective area. A first survey of all the townships in the heavily diseased area of Connecticut was completed on August 2. The data show that 9.6 samples per square mile were collected in this area, as compared to 5.8 samples per square mile for the same area in the first survey last season.

Heavy infection of Dutch elm disease in New Jersey.--Confirmations for the 4-week period ended August 27 revealed 5,594 elm trees infected in New Jersey. In 1 week's scouting some 200 confirmations were obtained in Clinton and Readington Townships, Hunterdon County. Autogiro scouting located six confirmations in Ringwood Township and one in West Milford, Passaic County, and two confirmations in Vernon, Sussex County. Two confirmations were also located in Blairstown, Warren County, one in the village of Blairstown, not scouted by the autogiro, and the other a small tree under a large elm located by the autogiro. All counties are now engaged on their second going-over.

More confirmations in Pennsylvania.--The two confirmed trees reported last month in Upper Mount Bethel Township, Northampton County, were removed and burned by August 9. Two additional confirmations were reported from this township and were eradicated by the end of the month. Two Graphium-infected trees were reported for a first record in Bucks County. One was discovered in Upper Makefield Township, the other in Lower Makefield Township. Both were eradicated by the end of the month.

Extension in Indianapolis infected zone.--A confirmation near the Hancock County line in Marion County, Ind., extended the known area of disease 6 miles to the northeast. This is an extension of 7 miles northeast from any diseased trees found in 1937. A total of 8 diseased trees was reported for Indianapolis for the month, raising the total to 31 for this year.

Increase in sampling of wilted elms.--More twig samples had been submitted to the laboratory by August 13 than were submitted during the entire 1937 season. A total of 6,042 confirmations was reported by the laboratory during the 4 weeks ended August 27.

Freak gypsy moth deposits.--While checking camps at a public camping ground located on Mount Tom Reservation in Holyoke, Mass., the district inspector noted that 4 gypsy moth egg clusters had been deposited on a looking-glass hanging on a tree. Another inspector while on duty at a nursery in Abington, Mass., discovered an egg cluster deposited on the running board of an automobile used locally.

C. C. C. camp equipment found infested.--Last spring several buildings of an abandoned C. C. C. camp, located in Wilmington, Vt., were dismantled and stored near oak trees at a camp in Bellows Falls, Vt. After the gypsy moth egg-laying season, two of these buildings were moved to Lunenburg, Vt., and on inspection were found to be infested with 7 new egg clusters.

Gypsy moth infestation on lumber shipments.--During August, 11 carloads of lumber, shipped from various stations in Maine, were found infested with different stages of the gypsy moth. One shipment from Westcott, Maine, carried 1 larva, 32 egg clusters, and 29 pupae. The first infested lot of nursery stock to be presented for inspection was examined at Fryeburg, Maine.

Unusual gypsy moth infestation in Connecticut.--Complete defoliation was in evidence in two sections of an area of over 2,200 acres in the town of Granby, Conn. At Camp Robinson, East Hartland, Conn. from 20,000 to 25,000 egg clusters a day have been creosoted.

Swarming Japanese beetles on steamships outbound from New York.--First evidence that Japanese beetles were swarming over Upper and Lower New York Bays and out over "The Narrows" in sufficient numbers to infest passing vessels was contained in a report by W. J. Douglass, of the Division of Foreign Plant Quarantines at Norfolk, Va. On July 29 Mr. Douglass observed Japanese beetles, one of which was alive, on three vessels arriving at Norfolk from New York. The one live beetle was picked up from the deck of the first vessel examined. A solitary dead beetle was found on the deck of another ship. On the third ship 300 dead beetles were found on the deck. In New York there was a heavy flight of adults on July 28, the date the latter ship sailed. The ship left the pier at 11:35 a.m. and was en route out of the harbor until shortly after 3 p.m., during the heat of the day. That day catches of 80 quarts of beetles in 200 traps operated by the Army post at Fort Wadsworth, Staten Island, and capture of approximately 30 quarts in 1930 traps operated at Fort Hamilton, Long Island, were recorded. These forts are on either side of "The Narrows." At Fort Jay, Governor's Island, 44 quarts of beetles were caught in 80 traps, making a grand total for the day of over 500,000 beetles captured in 410 traps. Transportation of beetles on northbound boats was also reported by Leonard S. McLaine, chief of the Plant Protection Division, Canadian Department of Agriculture. Inspectors of the division found 25 live and 51 dead beetles on the upper decks of coastwise vessels arriving at the port of Yarmouth, Nova Scotia. Six and 17 dead beetles were also found on the decks of two cruise ships arriving at the ports of Quebec and Montreal. Officials of the Bermuda Department of Agriculture are also concerned about the possibility of beetles being spread to the island by vessels arriving from the heavily infested New York area. About the middle of July it was reported to the Bermuda authorities that large numbers of beetles were invading the vessels of the Furness-Bermuda Line while the ships were in dock in New York, and also while the boats were proceeding down the bay and along the New Jersey coast. According to eye witnesses, large swarms invaded the decks. No beetles were observed to invade the interior of the vessels or the staterooms and none were seen alive after the first day out. A careful search of the vessels while berthed at Bermuda revealed no living beetles but about 50 dead beetles were found in the lifeboats and on the lifeboat decks of two vessels. On August 23 John M. Waterston, plant pathologist of the Bermuda Department of Agriculture station at Paget East, and Charles A. Baker, also engaged in agricultural work on the island, visited the Japanese beetle area and were shown the conditions of infestation surrounding New York Harbor. The object of their trip was to investigate the possibility of beetles being spread to Bermuda. Few beetles were recovered at Bermuda after August 11 and on August 15 only six beetles were taken from both vessels. No further specimens were found after that date.

Trap-scouting for Japanese beetle.--By the end of the month trapping had been concluded in Alabama, Arizona, Florida, Georgia, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, South Carolina, Tennessee, Texas, Virginia, and West Virginia. Trapping continued into September in the following number of cities and towns in the respective States: California, 8; Colorado, 2; Idaho, 4; Illinois, 15; Indiana, 10; Iowa, 1; Kansas, 2; Maine, 18; Michigan, 14; Missouri, 3; New Hampshire, 4; New York, 46; North Dakota, 1; Ohio, 58; Oregon, 2; Pennsylvania, 3; Utah, 5; Vermont, 1; Washington, 4; and Wisconsin, 6.

Trapping for Japanese beetle in Canada.--According to a report from Leonard S. McLaine, chief of the Plant Protection Division, Canadian Department of Agriculture, Japanese beetle traps established at various points along the border, particularly on the Niagara Peninsula, had trapped no beetles up to August 20. Canadian inspectors found 15 dead beetles in motor cars examined at Yarmouth, Nova Scotia, and 5 dead beetles in motor cars inspected at Windsor, Ontario. In freight cars examined, 16 dead beetles were found at Toronto and 1 at Niagara.

Fumigation of log piles with chloropicrin.--Using a canopy of duplex kraft paper, the section working on the development of control methods has been able, under laboratory conditions, to secure 100-percent kill of S. multistriatus larvae in elm log piles by fumigation with chloropicrin. The canopy is placed over the pile to form a gas-proof tent. This procedure has been employed principally with piles of fuel wood.

Orthodichlorobenzene-naphthalene emulsion as larvicide for elm bark beetles.--Members of the section working on the development of Dutch elm disease control methods tried out the orthodichlorobenzene-naphthalene formula as a larvicide against the smaller European elm bark beetle (Scolytus multistriatus Marsh.). An effective larvicide would serve a triple role in Dutch elm disease control work. Its most important use would be as a spray on dead branches of noninfected elms of low vitality, which are natural breeding places for the bark beetle. The larvicide would also be valuable in destroying beetles infesting piles of elm logs kept for use under fuel agreements. In addition, a larvicide is desired that will serve as a repellent when sprayed on freshly cut green logs that would become attractive to migrating beetles. Preliminary tests with the emulsion show as high as 80-percent mortality when the material was used as a larvicide, with equal effectiveness when employed as a repellent.

Prefumigation requirements lifted.--The prefumigation requirement for empty refrigerator cars on the Eastern Shores of Maryland and Virginia was lifted at midnight August 19, and in the Baltimore section on August 24. At midnight August 31 this requirement was lifted in the entire area affected. In lieu of this prefumigation, cars used for hauling fruits and vegetables from the generally infested area to outside points were made eligible for loading with inspected produce by thorough cleaning and inspection. All vents were screened when opened for ventilation. Fumigation under load was required after these dates only when produce was loaded in a car which has not been preinspected, or when the product contained infestation that could not be otherwise eliminated. The heavy flights of beetles in the New York City area necessitated the continuance of fumigation of loaded banana refrigerator cars moving from the Port of New York until August 22, on which date it was discontinued. During the month, 87 cars containing 30,608 bunches of bananas were fumigated. In addition 1,197 empty refrigerator cars were fumigated by the two principal New York banana shippers. Most of the cars were fumigated in the various railroad yards located in nearby New Jersey before their transfer to banana barges and floating to the New York side.

Beetles travel by plane.--Examination late in July of cabins in planes of American Airlines outbound from Newark, N. J., arriving at the Buffalo, N. Y., airport for several weeks resulted in the removal of 71 Japanese beetles, 39 of which were still active. Thirty-three of the beetles were found on planes that had left Newark Airport about noon and arrived at Buffalo at 2:30 p.m. Most of the dead specimens were found crushed in the rugs on the cabin floors. Stewardesses informed the inspector that they had killed a number of beetles in the planes after taking off from Newark. Several passengers also mentioned that they had killed beetles in the plane. Some of the pilots stated that after the take-off at Newark they could see occasional beetles clinging to the crevices on the outside of the glass of the cockpit, but that the wind soon dislodged them.

FOREST INSECT INVESTIGATIONS

Roundheaded pine beetle as a primary insect.--J. A. Beal, of the Fort Collins, Colo., laboratory, reports finding Dendroctonus convexifrons Hopk. killing a large number of ponderosa pines in an aggressive epidemic on the Lincoln National Forest, in southern New Mexico. Heretofore this insect has only been reported as attacking the lower portions of trees previously infested by other bark beetles and as sometimes becoming primary on decadent or weakened trees. It has been reported as usually being secondary and relatively unimportant. During the last 4 or 5 years the outbreak on the Lincoln National Forest has been responsible for the death of thousands of ponderosa pine trees. Heaviest losses have been in the pole stands and on young trees from 2 to 10 inches in diameter, with less damage to the old overmature decadent trees. Control work has been carried on yearly in the infestation and during the last year about 50,000 infested trees were treated. Except for a few limited areas the outbreak appears to have been successfully controlled.

Hibernation and hosts of spruce budworm.--Donald DeLeon, Fort Collins, reports that the spruce budworm is found to hibernate almost immediately after hatching, which occurs during the first half of August. As soon as its hibernaculum is formed, the insect molts. Observation so far indicates that, although the first-stage budworm larva of the race on Douglas fir feeds slightly on the under side of the needles along the row of stomata, no feeding is done by the race on ponderosa pine. The spruce budworm has been found to be increasing on Elk Mountain in southern Wyoming where it has been observed attacking not only Douglas fir and alpine fir but also limber pine and lodgepole pine. The damage in this area is negligible at present.

A parasite of the adult Douglas fir beetle.--An interesting chalcid parasite of the adult Dendroctonus pseudotsugae Hopk. is reported by Donald DeLeon from southern Utah. This parasite winters over as a full-grown larva in the abdomen of the beetle and emerges in June, by chewing a circular hole through the elytra at the declivity. Though it is possible that a reduction occurs in the number of eggs laid by the parasitized beetles, the beetles do not die until after a good many eggs have been laid. A. B. Gahan, of the Division of Insect Identification, has tentatively called this parasite Tomicobia n.sp., but he is not satisfied that it falls correctly into that genus.

Adults of spotted hemlock borer active late in season.--H. C. Secrest, Milwaukee, Wis., reports that adults of the spotted hemlock borer were still active and that eggs were laid during the last week in August. Beetle emergence had decreased during the latter part of July but, following a warm period which continued into August, beetle activity continued throughout the month. No pupae were found during the latter part of August.

Forest tent caterpillar heavily parasitized in Minnesota.--R. H. Nagel, Milwaukee, found that the forest tent caterpillar was heavily parasitized this year in the Gunflint area of the Superior National Forest in northeastern Minnesota. General collections of cocoons made and examined after moth emergence was completed indicated that over 95-percent parasitization had occurred. About 7,000 cocoons were collected as soon as possible after they were formed and these cocoons were then placed in a large screened cage to protect them from further attack by parasites. About 30 percent of these cocoons produced moths and 29 percent had been parasitized by tachinids and 41 percent by sarcophagids.

Sawfly control in Michigan forest plantations.--H. J. MacAloney, Milwaukee, reports heavy infestations of jack and red pine plantations in Michigan National Forests by Leconte's sawfly (Neodiprion lecontei Fitch). In some young plantations on the Marquette Unit of the Upper Michigan more than 20 percent of the trees were attacked and, as surrounding natural growth was also infested, the Forest Service sprayed all planted stock on approximately 2,200 acres. Cost figures are not yet available. On the Manistee, in lower Michigan, it is reported that 7,600 acres of plantations were sprayed at a cost of from 12 to 25 cents per acre, but it is understood that in this case only the infested trees were sprayed.

Recent insecticide experiments.--S. F. Potts, of the New Haven, Conn., laboratory, reports on insecticide studies, as follows: (1) Against the European pine shoot moth, derris was the most effective insecticide tested and lead arsenate was the least expensive of the effective insecticides. The control ranged from 85 to 99 percent. The mixtures contained adhesives and spreaders. They were applied by ground equipment. Concentrated spray mixtures were much more effective than standard spray concentrations and can be applied at a small fraction of the cost of mixtures of ordinary spray concentration. (2) In experiments fluid mixtures have been prepared containing adhesives and spreaders which required only 1 pound of water or solvent per pound of insecticide. A 5-cubic-foot tank (36 gallons), full of a lead arsenate fluid mixture, contains 250 pounds of lead arsenate, whereas it will hold only 100 pounds of the dry lead arsenate dust. Mixtures containing new adhesive and spreaders have been developed which may make unnecessary the use of oils as stickers, both in concentrated sprays and in dusts. When sulphur and certain other insecticidal dusts are applied in concentrated spray mixtures the fire hazard is apparently eliminated.

Gypsy moth studies continued.--According to H. A. Bess, New Haven, Conn., intensive studies were continued this season on the gypsy moth in the experimental areas located at Eastford, Conn., and at Petersham and Freetown, Mass., to measure the mortality caused by different ecological factors. In certain portions of the experimental area at Petersham, Mass., all the eggs in a number of exposed egg clusters failed to hatch. It appears that high egg mortality was associated with relative elevation, the greatest mortality occurring at low elevations. Consequently, comparatively few larvae were present except fairly high on ridges. The egg mortality at Eastford, Conn., was quite low, while at Freetown, Mass., it was about 35 percent, a large part of this being the result of parasitization. The feeding of the larvae did not produce conspicuous defoliation in the experimental areas at Petersham, Mass., or Eastford, Conn., and only a slight amount in the area at Freetown, Mass.

Spruce bark beetle declining in Northeast.--T. J. Parr, New Haven, reports that in scouting for spruce infested with the eastern spruce beetle (Dendroctonus piceaperda Hopk.) on the White Mountain National Forest in Waterville Valley and vicinity in New Hampshire, an area of 148 acres was covered in chain-wide strips. On this area 14 infested trees were found, or an average of 0.09 tree per acre. In a survey the latter part of August on the northern division of the Green Mountain National Forest in Vermont an area of 342 acres was covered in chain-wide strips totaling 42.7 miles in length. On these sample strips a total of 75 infested trees were located, or an average of 0.22 tree per acre. As the surveys 1 and 2 years ago indicated a much higher degree of infestation, even on areas where no control has been practiced, the present survey indicates that the infestation is declining.

Concentration of elm bark beetles near suitable breeding material.--W. D. Buchanan, of the Morristown, N. J., laboratory, has counted the number of uninjured twig crotches and the number of injured crotches on parts of a number of elm trees removed by the Dutch elm eradication unit. The trees were removed at known distances from a large fallen elm branch in which the smaller European bark beetle (S. multistriatus) had bred in large numbers. The injuries to the twig crotches were presumably made by beetles that issued from the fallen limb. The data obtained by Mr. Buchanan is tabulated below.

Distance in feet from brood trees	Trees examined	Crotches examined	Crotches injured	
	Number	Number	Number	Percent
0-400----	27	17,210	3,833	22.27
401-800----	24	11,933	63	.53
801-1,200--	17	7,627	25	.33
1,601-2,000--	2	1,091	6	.55
3,201-3,600--	2	1,369	1	.07
4,800-5,200--	3	1,650	0	.00

Flight of elm bark beetle.--R. R. Whitten, Morristown, has obtained data on the distances to which adults of S. multistriatus can fly. Adults were liberated in an elm-free area, at distances of ½ mile, 1 mile, and 2 miles, and in all directions (north, south, east, and west) from freshly felled elm trees that were taken into the area. Five freshly formed S. multistriatus galleries containing living beetles were formed when beetles were liberated 1/2 mile from the trees; two galleries were formed when beetles were liberated 1 mile away; and two when they were liberated 2 miles distant.

GYPSY MOTH AND BROWN-TAIL MOTH CONTROL

Burlap bands removed and destroyed.--The patrolling of burlap bands was discontinued about the middle of August, as practically all of the gypsy moth caterpillars had either pupated or reached the adult stage and deposited their egg clusters, and the work of removing and burning the bands was started.

Preparation of assembling-cage material for gypsy moth completed.--The collection of attractant material and the preparation of bait for assembling-cage work was completed in August. Approximately 686,000 female gypsy moth pupae were collected this season, and more than 240,000 female moths emerged and were used in the preparation of the attractant material. The percentage of issuance of female moths, about 35 percent, was the highest since the work has been performed in the Connecticut Valley. A total of 8,025 cages, consisting of 30 abdomen tips each, were made. This material has been placed in cold storage in Greenfield, Mass., where it will be kept until needed next summer.

Fences surrounding sprayed areas repaired quickly after storms.--Intermittent electrical storms and high winds during August in both the New England and Pennsylvania gypsy moth infested areas necessitated frequent patrolling of the fences around areas sprayed in July. Uprooted trees and broken branches that had fallen on the fences were removed and the fences were repaired immediately, in order to prevent livestock from grazing in the sprayed areas.

Damaged and dead fruit trees retard gypsy moth work.--A large percentage of the fruit trees in northern Vermont were either killed or severely damaged by extremely cold temperatures during the winter of 1933-34.

Many of these trees have not been removed and are now in exceedingly poor condition. Much more time is consumed in scouting these trees than is normally required in examining healthy trees, as all the cavities and loose bark must be inspected and the fallen limbs and debris must be picked up. These trees, especially those still producing foliage where the caterpillars may feed, offer ideal places of concealment for the gypsy moth egg clusters.

Difficult remote areas in Vermont being scouted for gypsy moth.--Crews assigned to duty in towns along the Green Mountain Range in Vermont are now scouting the wooded areas remote from traveled roads in an effort to complete the examination of this rugged territory while walking conditions are good. Some of the territory is so isolated that several of the crews are walking from 1 to 5 miles each day after leaving their transportation before scouting is begun. Crews scouting in the region of Mount Mayo, in the southeastern section of Underhill, were obliged to temporarily discontinue work in that locality beginning August 20, as the area where they were working is within the military range and is to be used for training purposes until about September 1. Scouting work was started during the first week in August in an unbroken stretch of woodland approximately 27,000 acres in area in the township of Glastenbury, Bennington County, Vt. The area is accessible only by a few trails and abandoned logging roads and the nearest points that can be reached by truck are several miles from the center of the block.

Exterminative measures to be applied at infestation near barrier zone.--Workers patrolling burlap bands continued to find gypsy moth larvae at one of the infested locations in Mount Holly, Vt., east of the barrier zone. Many old apple trees in this area provide excellent conditions for the survival of the pest. It is anticipated that thorough scouting of the territory during the autumn, followed by suitable treatment work, will exterminate the gypsy moth in Mount Holly and eliminate this threat to the barrier zone.

Infestation found in growth considered unfavorable for gypsy moth development.--The crew scouting in the town of Shrewsbury, Vt., which adjoins Mount Holly and is east of the barrier zone, has found several gypsy moth egg clusters in growth consisting chiefly of maple, beech, and yellow birch, with maple predominating. These species of trees are not listed in the favored food class in the report of the Research Division.

Scouts receive instruction by working temporarily in heavily infested area.--Gypsy moth employees engaged in scouting in southern Connecticut recently worked for a short time in a heavily infested area in Granby, Conn. The experience gained by working in territory where egg clusters are plentiful is especially beneficial to new men working in sparsely infested regions and they return to their regular areas with an increased understanding of gypsy moth control measures.

W. P. A. gypsy moth work temporarily suspended in Pennsylvania.--All W. P. A. gypsy moth work in Pennsylvania was suspended during the first week in August, pending the approval of the project in that State. The regular Federal and State employees carried on the work of periodically examining the assembling cages, patrolling the fences around sprayed areas, and inspecting shipments of materials throughout the gypsy moth quarantined area. Funds for the continuation of W. P. A. field work in Pennsylvania were made available so that the activities could be resumed on August 8. The crews patrolled burlap bands, did cleaning work at sites of infestations, and sprout removal and selective thinning work until the latter part of August. The scouting force was then employed in creosoting egg clusters in generally infested areas in preparation for the start of actual scouting, which will begin about September 1 in the territory along the Lackawanna and Susquehanna Rivers. Each year the men are assigned to creosoting in areas where egg clusters are relatively abundant immediately prior to the beginning of scouting work, so that all crew members may have an opportunity to locate and destroy numerous egg clusters.

Several male gypsy moths recovered at assembling cages in Pennsylvania.--Adult male gypsy moths were found at two assembling cages in Jefferson Township and at one cage in Madison Township, in Lackawanna County; at one cage in Tobyhanna Township, Monroe County; at one cage in Kidder Township, Carbon County; and at one cage in Dennison and one cage in Kingston, Luzerne County, Pa., up to August 20. These cages are within the infested area in Pennsylvania, and most of them were located a relatively short distance from previous infestations.

Bear observed eating tanglefoot at assembling cage.--Evidence that bears had eaten the tanglefoot surrounding assembling cages set out in various parts of the gypsy moth infested section of Pennsylvania has been found on several occasions this year. However, it was not until the last week in August that a bear was actually observed in the act. As the tanglefoot is placed on the trees for the purpose of holding any male gypsy moths that may be attracted to the cages, it is fortunate that the number of instances in which the tanglefoot has been removed by bears this season is relatively low.

C. C. C. gypsy moth work during the fiscal year 1938.--During the fiscal year ended June 30, 1938, C. C. C. enrollees were employed 142,226 6-hour man-days in New England on various types of gypsy moth work, under the supervision of this Bureau. They examined the growth on more than 247,850 acres, including woodland, open and intensively scouted areas, and 1,833 acres selectively thinned. More than 3,822,700 new gypsy moth egg clusters were creosoted. Burlap was applied to over 610,500 trees and resulted in the destruction of 4,974,520 gypsy moth caterpillars and pupae by the end of the fiscal year. The figures given for the burlapping work are approximately one-half of the total for the complete caterpillar season, as this type of work continues into July and August and only the amount accomplished before July 1 is shown in the report for the fiscal year.

C. C. C. enrollees working at very heavy infestation in Connecticut.--More than 100,000 new gypsy moth egg clusters have already been treated by C. C. C. enrollees at a very heavy infestation in Granby, Conn. There are pockets in this area in which the egg clusters will average at least 100,000 to the acre. A rapid survey of this area is being made and the pockets of heaviest infestation are being located on typographical maps in order that all of the worst spots may be treated as soon as possible.

PLANT DISEASE CONTROL

Many local stem rust epidemics in Pennsylvania traced to barberries.--Aeciospores were being liberated from cluster cups on barberry leaves in many localities in Pennsylvania by May 12 this year. The amount of infection steadily increased until May 20, when low temperatures retarded further development. According to L. K. Wright, state leader in charge of barberry eradication, stem rust was spreading from barberries to grain in central and northern Pennsylvania counties early in June. Infection could be found by June 18 in practically all grain fields where barberry bushes were growing in adjacent pastures or woodlots. Stem rust on oats, barley, and rye seemed to be confined almost entirely to direct spreads from barberry bushes. The same was true with wheat, except in counties in southeastern Pennsylvania, east of the Susquehanna River, where inoculum appeared in considerable quantity and the spread could be traced from east to west, indicating that infection may have come from barberry bushes in the extreme southeastern part of the State, or bordering territory in adjoining States.

Control operations conducted in 15 counties.--Since barberry eradication was undertaken in Pennsylvania in 1935, more than 8 million barberry bushes and seedlings have been destroyed in 15 counties. An intensive survey has been made of more than 4,000 square miles. According to reports received from farmers, there has been a definite reduction in the amount of stem rust damage in communities where the initial eradication work has been completed.

Barberry bushes removed from 39 counties in Ohio.--When emergency funds became available for barberry eradication work in Ohio, counties were selected for attention in which large numbers of wild bushes were known to exist. The plan of operation has been to keep as large an area of the State free of rust-susceptible barberry bushes as funds would permit. Since 1933 an intensive inspection has been made of all uncultivated land in 39 counties, resulting in the eradication of more than 890,000 barberry bushes and seedlings on 3,765 properties. In addition, from 30 to 90 percent of the area in three counties has been completed and work is now progressing in nine more counties. An analysis of the recently compiled county progress maps for Ohio show that no bushes were found in 44 percent of the area that has been covered with emergency funds which, in reality, constitutes a second survey. All infested properties found have been carefully recorded and mapped and future reinspections in these counties will be confined to timbered areas and other uncultivated lands within a 2-mile radius of these properties, except when outbreaks of rust or reports from property owners lead to bushes that were missed when the intensive survey was made.

Berberis canadensis found in Cass County, Ind.--Approximately 3,000 *Berberis canadensis* bushes were found on the banks of the Wabash River, in Cass County, 5 miles east of Logansport, according to Stanley Castell, who is in charge of stem rust control work in Indiana. This is the second location of *B. canadensis* located in the State since barberry eradication was first undertaken in 1918. This species of barberry is native to Virginia and West Virginia, but there is still some doubt as to whether it is actually native in certain localities in Indiana and Illinois, or whether small patches of it may have been planted years ago. Mr. Castell states that the bushes were located by a crew of W. P. A. laborers none of whom had ever seen B. canadensis before. Their training had been restricted to learning the characteristics of the common barberry, which has quite a different growth habit.

Experiments to determine the susceptibility of ribes alpinum to blister rust.--The white-pine-blister-rust susceptibility of the attractive, dioecious alpine currant (Ribes alpinum Linn.), grown as an ornamental in landscape gardening, has been variously reported. In European and North American literature the species has been listed both as susceptible and as immune. Field tests with R. alpinum to determine the susceptibility have been carried on in Wisconsin by T. F. Kouba, who found the plants with which he worked to be immune over a number of years. Experimental inoculation tests conducted by G. G. Hahn, of the Division of Forest Pathology, Bureau of Plant Industry, in 1937 and 1938, with authentic male and female material of R. alpinum from the Marsh Botanical Garden, Yale University, and from the Arnold Arboretum, respectively, have demonstrated the male plant to be fully immune from blister rust, whereas the female plant was susceptible. These results probably explain the conflicting reports concerning the resistance of R. alpinum to blister rust infection.

New infection centers located in Virginia.--Nineteen new infection centers have been found in Virginia this year in Augusta, Highland, and Rockingham Counties on either pine or Ribes, or on both. Infections on white pine at 17 of these locations ranged from 3 to 7 years of age. The aecial stage was noted at four places. Of the 19 new centers, 5 were located between 1,500 and 1,999 feet elevation; 9 between 2,000 and 2,999 feet; and 5 between 3,000 and 3,800 feet. The infection on Ribes this year is for the most part classed as heavy.

Rust found on Ribes in sugar pine region.--W. V. Benedict, regional leader of blister rust control work in the sugar pine region, reports the location of blister rust infection on Ribes at several points on the Lassen National Forest, Calif. Infections on Ribes roezli were found at four places in Tehama County. The southernmost of these four infections represents a southward advance of approximately 18 miles of the southernmost infection discovered last year. Numerous infections on Ribes have also been located along Montgomery Creek in Shasta County by W. W. Wagener and Goerge A. Zentmyer, Jr., of the Division of Forest Pathology, Bureau of Plant Industry.

Blister rust training schools for Indians.--On July 5, blister rust agent E. W. Cleasby conducted a blister rust control project training course on the Lac Court Oreilles Indian Reservation in Wisconsin, with 35 Indians attending. Most of them had never before performed blister rust control work. The need for such work was explained, then the men were assigned to crews and trained in actual Ribes-eradication work. On July 6, T. F. Kouba, State leader of blister rust control work in Wisconsin, conducted a similar training course on the Bad River Indian Reservation, with 29 Indians attending. Samples of blister rust were shown to the group and a brief talk was given regarding the need for control work, and explaining how the work is done, before the men were assigned to crews and trained. In cooperation with the Menominee Indian Reservation, a blister rust control display was placed at the Conservation Exhibit at Shawano, Wis., on July 30 and 31.

Spread of blister rust in the North Central States.--In August blister rust infection was reported for the first time on *Ribes* in the following counties: Calumet and Green Lake Counties, Wis., *Ribes cynosbati* being the infected host plant; Wexford and Lake Counties, Mich., where medium to light infection was found on *R. cynosbati* bushes; and Holmes County, Ohio. Many other infections were reported in counties where the rust had previously been found. One of these was the discovery of a new pine infection in Emmet County, Mich., at Michilimackinac State Park, Mackinaw City. Infected *Ribes* were also found within the park boundary. This discovery extends the range of known infection to the northern limits of the county.

COTTON INSECT INVESTIGATIONS

Cotton aphids.--Cotton aphids have been unusually abundant this season and have caused considerable damage in some fields, especially on plats treated with several applications of calcium arsenate, cryolite, or mixtures of paris green and sulphur. Dusting with nicotine sulphate, the control generally used, is sometimes unsatisfactory unless conditions are just right, and tests with dusts containing rotenone have been made this season at several stations. At Florence, S. C., F. F. Bondy and C. F. Rainwater used a cube-sulphur dust on August 11 at the rate of 17.5 pounds per acre. The dust was mixed to contain 1 percent rotenone, but probably did not contain that amount. There was no apparent reduction in the aphid population after 4 days and a 2-percent nicotine sulphate-lime dust, applied at the rate of 16 pounds per acre, gave fair control. In another test at Florence the following insecticides were used: (1) 9.2 pounds of 2 percent nicotine sulphate-lime dust per acre; (2) 48 gallons Lethane 440 (1 to 250) per acre applied with a knapsack sprayer to both sides of row; (3) 11.2 pounds of derris-tobacco-sulphur dust (1 percent rotenone) per acre; (4) 18.4 pounds of cube-sulphur dust (1 percent rotenone) per acre. (The cube used in the last test was from a different batch from that used in the other experiment). Neither the nicotine-lime dust nor the Lethane spray gave any noticeable control, though this may have been due to a shower of rain that occurred within 30 minutes after the applications were made. Both the cube and derris gave good control. From these and other observations it appears that rotenone may be more effective in the presence of moisture. At Tallulah, La., most of the calcium arsenate dusted and some untreated plots developed heavy aphid infestations during August. Satisfactory control was obtained from one application of 7 to 10 pounds per acre of 3 percent nicotine-lime dust. Three plots with a medium aphid infestation were dusted by M. T. Young with a derris-clay mixture containing 1 percent rotenone at the rate of 10 to 13 pounds per acre. To one of the mixtures was added 1 percent Aresket, to another 1 percent Vatsol, while the third contained no wetting agent. Very little, if any, control was obtained from any of these applications. Another series of heavily infested plats at Tallulah were dusted by G. L. Smith with these mixtures about the same time, also with negative results. Similar lack of control of cotton aphids with dusts containing rotenone resulted on plots dusted by K. P. Ewing at Port Lavaca, Tex., in July.

Boll weevil parasites.--Last year colonies of *Microbracon kirkpatricki* Wilk., an introduced parasite of the pink bollworm, were liberated in the Gulf coast section of Texas to see whether it would become established on the boll weevil, after laboratory tests had shown that it would parasitize the boll weevil. This season collections totaling 3,155 weevil-punctured squares were made by H. J. Crawford, of Port Lavaca, Tex., from the area where liberations were made, but no *M. kirkpatricki* were recovered. Of the productive squares, i.e. those producing either squares or weevils, 7.4 percent were parasitized by native species.

Cotton leaf worm and flea hopper parasites.--In order to obtain more definite data on the percentage of parasitization and the number of parasites emerging from pupae of the cotton leaf worm, H. J. Crawford placed 873 field-collected pupae in individual vials for observation. From these, 488 moths emerged--125 *Brachymeria ovata* (Say) and 98 *Phorocera* and *Sarcophaga* spp., or 20.16 percent parasitization of the pupae. *B. ovata* pupates within the *Alabama* pupae and in most cases emerged about a week later than moths from pupae of the same age, and in one case emerged 14 days after the host pupated. In all instances only one *B. ovata* emerged from a leaf worm pupa. The *Phorocera* sp. larvae emerged through irregular openings near the middle of the leaf worm pupae and pupated within 24 hours. The flies emerged after a pupal period of from 8 to 10 days. As a rule only one *Phorocera* sp. and several *Sarcophaga* sp. emerged from one host pupa. Seven *Sarcophaga* sp. emerged from each of two leaf worm pupae. It was not definitely determined whether the sarcophagids were parasitic or saprophytic. The cotton flea hopper egg parasite, *Erythmelus psallidis* Gahan, was recorded for the first time from Bexar and Wilson Counties, Tex., and was also found in abundance in collections of flea hopper eggs from croton and horsemint in Mississippi. One reared *E. psallidis* required 12 days for the combined egg, larval, and pupal stages. The parasitization of 3,188 flea hopper eggs in the stems of bitterweeds, cotton, croton, and sensitive pea was 32.8 percent by *E. psallidis* and 1.4 percent by *Anaphes anomocerus* Gir., or a total of 34.2 percent.

Collection of insects on flight screens.--During the last 5 years, from 1933 to 1937, inclusive, 12 flight screens, each consisting of 2 stationary frames set at right angles and covered with 4,320 square inches of tanglefooted wire screen were operated by K. P. Ewing and associates at Port Lavaca, Tex., for determining the flight of cotton flea hoppers and boll weevils. This year these screens were discontinued and four revolving screens with one side that always faced the wind were substituted. Records during previous years had shown that, especially during the migratory period, approximately as many flea hoppers were caught on the revolving screens with only half the tanglefooted area as on the stationary screens. The numbers of flea hoppers and boll weevils caught per screen, which is a rough index of the numbers present, were as follows:

Year	Flea hoppers		Boll weevils	
	August	Seasonal total	August	Seasonal total
1933----	117.4	1,159	24.3	24.9
1934----	60.2	971	10.9	11.4
1935----	38.8	482	3.7	5.3
1936----	60.0	242	1.7	4.3
1937----	41.9	605	47.1	75.0
1938----	38.2	355	2.8	3.0

During the principal period of migration (April to June) more than twice as many flea hoppers were caught on the windward side of the screens as on the leeward, whereas during July and August slightly more flea hoppers were taken on the leeward than on the windward side. Fewer boll weevils have been collected per screen this year than in any previous year at Port Lavaca. This is in line with the actual field activity of this insect and the damage it has caused, the late season damage being greater in 1937 than for any of the other years, while in 1938 there has been very little boll weevil damage in this section to date. At other places the boll weevil situation has been quite different this season. At Tallulah, La., G. L. Smith and A. L. Scales operated three stationary and three revolving screens. The average catch per screen during August was 221 weevils on the stationary and 89 on the revolving screens. The catch on both types of screens was more than three times as great as in 1936 and 1937. At Florence, S. C., the stationary screens operated by F. F. Bondy and associates caught 177 weevils per screen during August, or more than in any year since 1928, when they were started. The field infestations and damage by weevils at Tallulah and Florence have also been considerably greater than during any recent year.

TRUCK CROP AND GARDEN INSECT INVESTIGATIONS

Experiments against pea aphid in southern Wisconsin.--J. E. Dudley, Jr., and T. E. Bronson, of the Madison, Wis., laboratory, report that the results of experiments against Macrosiphum pisi (Kltb.) in southern Wisconsin during 1938, wherein dust mixtures and sprays containing rotenone, as well as nicotine vapor, were applied to large-scale experimental plots, indicate that all of these insecticides resulted in an increase in yield, as compared to the untreated check plots, and that, owing to the conditions of pea aphid infestation which existed during the current year, there were no outstanding differences between these treatments. The increase in yield for the different treatments, as compared to the untreated plots, ranged from 123 pounds to 1,577 pounds of shelled peas to the acre and averaged 465 pounds. The average yield of all the plots including the checks was 2,994 pounds of shelled peas per acre, whereas the check plots averaged 2,570 pounds per acre. The price for a certain plot of peas, based on a certain percentage of size, is called the "grade rate", which is based on the percentage of different size of peas. The average grade rate for all of the treated and untreated experimental plots was $2.92 per hundred pounds. Using this average grade rate, the increase in the value of the yield of the treated plots ranged from \$3.59 to \$46.05, and averaged \$13.58 per acre. On account of the cool weather and subsequent rains, the reduction of the pea aphid infestation attributable to insecticide applications during 1938 was not as high nor was it maintained for as long a period as has occurred during the previous 2 years, although in most of the plots treated the reduction in infestation was satisfactory. The most evident conclusion that may be drawn from the 1938 work against the pea aphid in southern Wisconsin is that, even with excellent growing conditions for peas and a light infestation of the pea aphid, an adequate financial return was obtained by treating the peas with the above-named insecticides.

Dusting sulphur and sulphur-pyrethrum dust mixture give best results against potato leafhopper on beans.--In summarizing the results obtained in insecticide tests against Empoasca fabae (Harr.) on beans in Ohio in 1938, N. F. Howard, of the Columbus, Ohio, laboratory, reports that the application of dusting sulphur or a sulphur-pyrethrum dust mixture gave the best results and were significantly superior to sprays containing some of the newer developed copper sulphates, basic copper arsenates, or sulphur nitride. Derris sprays also were comparatively ineffective. When used with peanut oil or pine oil the effectiveness of the derris sprays were increased, but peanut oil caused a yellowing of the bean leaves and subsequent defoliation and, although pine oil caused less injury to the bean foliage, it appeared to be too injurious to be recommended for general use.

Flooding proves an effective method of controlling wireworms in Washington.--E. W. Jones, of the Walla Walla, Wash., laboratory, reports that the results of recent experiments in the flooding of irrigated lands to control wireworms, principally the sugar beet wireworm (Limonius californicus (Mann.)) and the Pacific coast wireworm (L. canus Lec.), indicate that this method leads to a marked reduction of the wireworm population when performed under proper conditions. In one experiment the plot was flooded for 7 days and the wireworm population was reduced from 5.1 to 0.9 per square foot, a reduction of approximately 82.4 percent. In another experiment wherein the plot was flooded for 10 days the wireworm population was reduced from 16.1 to 1.2 per square foot, a reduction of 92.6 percent. In these experiments the soil temperatures averaged 73° and 74° F., respectively, in the layer extending from the soil surface to the 12-inch depth.

Germination of sugar-beet seed retarded by application of naphthalene.--Observations by M. W. Stone, of the Alhambra, Calif., laboratory, have indicated that the germination of sugar-beet seed is retarded and possibly injured by applications of crude naphthalene sowed with the seed in an attempt to repel or kill the larvae of the sugar-beet wireworm. Owing to the heavy infestation of L. californicus in certain fields where sugar-beet seed was to be planted, crude naphthalene was drilled in the rows with the seed at rates ranging from 4.6 to 11.8 pounds per acre. In planting the seed with the naphthalene, an ordinary 4-row seed drill with a fertilizer attachment was used. As the naphthalene was moist it was necessary to mix with it a small quantity of dry sand so that it would feed properly through the fertilizer drill attachment. Detailed examinations of portions of the treated fields indicated that there was no significant difference in the average number of surviving L. californicus larvae per unit area in the treated and check rows, showing that the naphthalene was ineffective as a wireworm repellent. The fact that some larvae were found dead in the rows, however, would indicate that naphthalene might show promise if drilled into bait rows. In the treated fields the beet seed germinated very slowly and the sprouts of those that did germinate appeared stunted and discolored, as compared to those in the checks. It appeared evident that these beets would not make a crop, therefore the growers replowed their fields at the end of 3 weeks after planting.

Increased acreage of Russian-thistle found in San Joaquin Valley.--W. C. Cook and his associates at the Modesto, Calif., laboratory report that the recent annual survey to determine the extent of territory occupied by Russian-thistle (Salsola pestifer A. Nels.) on the west side of the San Joaquin Valley in California, comprising the entire area west of the valley from Los Banos to Devil's Den, revealed the presence of the largest acreage of Russian-thistle since the survey was started in 1931. A total of approximately 92,500 acres in the territory surveyed was found to be occupied by Russian-thistle to a density exceeding 10 percent of the acreage. This is nearly double the next highest acreage of this pernicious weed, approximately 52,500 acres, which was found in 1935. Russian-thistle is a favored summer host plant of the beet leafhopper and functions as an important source of infestation of cultivated crops. Scattered collections indicated that this entire acreage was well populated with Eutettix tenellus Bak.

Most sugar-beet wireworm eggs deposited in top 3 inches of soil.--In a series of field examinations whereby the soil was dug in successive 1-inch layers in an alfalfa field from which a heavy emergence of adults of the sugar-beet wireworm had been observed, F. H. Shirck, of the Parma, Idaho, laboratory, found that of a total of 1,045 eggs found in the successive 1-inch layers from the 1-inch level to the 7-inch level, 83.6 percent were found in the top 3 inches of soil.

INSECTS AFFECTING MAN AND ANIMALS

Eggs of Aedes aldrichi Dyar and Knab may hatch the same season they are laid.--For some year it has been a matter of conjecture whether the eggs of certain species of Aedes which are deposited on the soil or mud require one season's dormancy before they will hatch. H. H. Stage, of the Portland, Oreg., laboratory, has demonstrated that this period of dormancy is not necessary, at least under experimental conditions. He reports: "Engorged A. aldrichi females were captured after having fed on a cow at Lotus Island. These were placed in two cages, one cage in the laboratory, the other in a well-protected situation among willows on the island. Although few eggs were laid, the number in each cage was about the same. A number of these eggs were flooded with asparagine-phosphate solutions from 8 to 17 days after oviposition. Of these treated, 78 percent hatched, thus demonstrating for the first time that eggs of this species may hatch the same season in which they are laid."

Mortality of eggs of Aedes vexans Meig. and A. aldrichi out of doors.--Mr. Stage also reports: "Several plaster-of-paris dishes containing eggs of these species, which had been recovered from soil late in 1937, were planted in a screened cage and left over winter. Of the plump-appearing eggs so obtained, 62 percent hatched when flooded during August. In June of this season the hatch was 84 percent. Because of the long dry period this summer, it is somewhat surprising that the mortality was no greater."

FOREIGN PLANT QUARANTINES

Larva of pineapple weevil from Mexico.--A living larva of the pineapple weevil (Metamasius ritchiei Marsh.) was intercepted at Brownsville, Tex., on May 6 in a pineapple in cargo from Mexico. The larva was doing primary injury to the pineapple, boring straight at the base of the fruit. As reported by C. C. Gowdy in Jamaica, when the fruit is attacked, the pineapple becomes unfit for consumption. When the fruit stalk is attacked, it is unable to withstand the weight of the fruit, which falls over and does not ripen.

Cotton pickers carry cottonseed.--Fifty pounds of seed cotton was picked from various articles of clothing and other personal effects belonging to 45 cotton pickers returning through Brownsville near the close of the cotton picking season in Mexico. The inspector was occupied for more than an hour in getting the seed and did not have time to examine it carefully. Such quantities of cotton coming from an area infested with pink bollworm obviously represents a potential risk.

Entomological interceptions of interest.--Thirty-one living larvae of the dark fruitfly (Anastrepha serpentina Wied.) were intercepted at El Paso, Tex., on March 24 in a single sapote fruit in baggage from Mexico. Seventy living larvae of the Mediterranean fruitfly (Ceratitis capitata Wied.) were intercepted at Boston on May 6 in 33 loquat fruits in the mail from the Azores. Living adults of Bruchus laticollis Boh. arrived at New Orleans on December 20, 1937, in vetch seed pods in cargo from France. The interception was made at the appraiser's stores. Living specimens of the scale insect Lepidosaphes tubulorum Ferris were taken at Washington, D. C., on April 4 on Hibiscus cuttings in the mail from the Philippines. Three living adults of the mordellid Mordellistena chapini Ray were intercepted at Seattle, Wash., on April 14 in a Cattleya leaf in cargo from Colombia. Four living larvae of the European corn borer (Pyrausta nubilalis Hbn.) were found at New York on May 10 in broomcorn stalks in the mail from Czechoslovakia. A living adult of Dermestes tessellatocollis Mots. arrived at Buffalo, N. Y., on April 18 in a box of dried vegetables in the mail from Japan. A living adult of the scarabaeid Trichius ornatus Jordan was intercepted at San Francisco on May 10 on an orchid (Cymbidium eburneum) in cargo from India. This species was not previously represented in the National Museum collection. An adult of the weevil Apion ochropus Germ. was taken at Mobile, Ala., on April 1 in vetch contaminating rye-straw jackets in cargo from France. A living larva of the large cabbage butterfly (Pieris brassicae L.) was intercepted at New York on January 25 on a leaf of white greens (Brassica chinensis) in cargo from Cuba. Living larvae of the olethreutid Epinotia opposita Heinrich was intercepted at Laredo, Tex., on February 5 on string beans in cargo from Mexico. This represents a new record of the species from Mexico and a new host-plant record.

Pathological interceptions of interest.--*Aphelenchoides parietinus* Bastian and *Aphelenchus avenae* Bastian were found in fairly large numbers in scales of cipollino bulbs from Morocco on August 12 at New York. Diseased *Vicia faba* pods intercepted at New York on May 9 were infected with a fungus having spores unlike any species in the genera *Ascochyta* and *Stagnospora* and hence not determinable. *Cercospora capsici* Heald was intercepted on peppers from Mexico during July at Brownsville. *C. musae* Zimm. was intercepted on banana leaves from Guatemala on August 1 at Boston. A rust intercepted on *Lonchocarpus* sp. or spp. leaves from British Guiana at New York on June 3 has been determined as *Dichirinia guianensis* Cumm. by Dr. Cummins. *Didymosphaeria* sp., no species described on the host, was intercepted on leaves of *Freesia* cut flowers from Holland at New York, in cargo, February 15. *Diplodia tubericola* (E. & E.) Taub. was intercepted in yams from China on August 22 at New York. *Phaeosphaerella ephedrae* (Hollos) Petrak was intercepted on stems of *Ephedra* sp. in mail from China on May 11 at New York. *Puccinia malvacearum* C. G. Bertero was intercepted on *Malva sylvestris* in mail from Italy on August 1 at Detroit and on August 23 at Buffalo. The rust has been intercepted from Italy in previous years on what was probably this host but the host material was inadequate for a determination until the Detroit interception was received. *Sclerotium oryzae* Catt. was intercepted on rice seed from India on May 25 at Washington. The sclerotia were not spherical, as they are in the stems. *Trichoseptoria* sp. was found on *Aucuba japonica variegata* leaves from Italy on January 21 at New York. *Urocystis cepulae* C. C. Frost was found on onions from Italy on August 24 at New York. *Ustilago bromivora* (Tul.) Fischer & Waldh. was intercepted on August 8 at New York in a mail sample of *Bromus shaderii* seed from Argentina. *B. shaderii* is a synonym of *B. unioloides* or *B. catharticus*, the latter being the accepted name in Hitchcock's manual. The grass is used for winter forage in the Southern States. The smut has been reported from a number of States on various species of bromegrass but this is the first time it has been intercepted.

DOMESTIC PLANT QUARANTINES

Grasshopper-control activities.--The grasshopper baiting program which has been conducted for the protection of crops in 24 States in the region from the Mississippi Valley to the Pacific Coast was practically completed by the close of August. Approximately 400 million pounds, or 200,000 tons of poisoned-bait materials have been made available to the States during the season. In preparation for the fall survey of 'hoppers, training conferences were held during July and August at various points in the field, at which the procedure for determining the extent and degree of infestations of the various species, including migratory 'hoppers, was outline in order that the survey might be conducted on a uniform basis.

Farmers harvest early in some grasshopper-infested areas.--During August when flights of *Melanoplus mexicanus* Sauss. first occurred, there was some tendency among farmers in certain areas to harvest grain prematurely for feed rather than to apply control measures. It is believed that much of the resulting loss could have been avoided by baiting, as recommended by State leaders, and populations of adults making the flights could have been reduced materially.

Mormon cricket activities.--To the close of July over 1,000,000 pounds of arsenite dust and 3,500 barrels of oil, the latter for use primarily in irrigation ditches, had been used in operations to protect crops from Mormon cricket attack. Hand- and power-dusting operations have proved highly effective in preventing damage to crops. The mixture of three parts of diatomaceous earth and one part of sodium arsenite proved as effective in killing the adult crickets as it had the younger instars. A survey of the adult and egg stages of the Mormon cricket is now under way throughout the ten infested States. Range plants in several areas were so heavily damaged in July and August that in some localities cattle and wildlife were seeking food plants elsewhere. Pines and willows were found partially defoliated by crickets.

Federal quarantine on white-fringed beetle under consideration.--A public hearing to consider a Federal quarantine because of white-fringed beetle infestations in Alabama, Florida, Louisiana, and Mississippi, is being held at New Orleans on September 15. Regulatory action thus far has been limited to State quarantines which have been adequate, as areas of infestation have been limited.

White-fringed beetle infestations.--State-wide inspections for the white-fringed beetle were conducted throughout August in Louisiana, Mississippi, Alabama, Florida, Georgia, Texas, South Carolina, and Tennessee. Inspection in the three latter States was confined primarily to railroad rights-of-way, highways, and tourist camps. Similar work was done in parts of Arkansas. Infestations were located at Baton Rouge, La., and vicinity. The city of New Orleans was found to be quite generally infested and the beetles were also found at points in other infested States near the known infested areas. Infestations are now known to exist in six parishes in Louisiana, five counties in Alabama, three in Florida, and eight in Mississippi. A total of over 41,000 acres is infested, of which approximately one-third is cultivated land. Clean-up activities have been started at several points recently found infested. Calcium arsenate dust for the purpose of reducing adult beetle population has been applied to 13,000 acres in the vicinity of Florala, Ala., Gulfport, Miss., Laurel, Miss., Pensacola, Fla., and New Orleans, La., and 369 acres in these areas have been sprayed with oil to destroy vegetation on waste land and thereby eliminate the adult food supply.

Peach-disease control activities.--Inspection for the phony peach and peach mosaic diseases was continued in August in 16 States, with a force of 54 Federal inspectors and 29 inspectors of the cooperating States and counties. Second inspections for the peach mosaic disease were made in infected areas of California and Colorado. Mosaic and phony trees are being removed at the time of inspection in several States, including Georgia. A scouting survey in the more important peach-growing areas of Idaho and Nevada, and a careful inspection of orchards and nurseries in three peach-growing counties of Kansas resulted in finding neither disease in any of these three States. Relief labor is engaged in the removal of diseased and abandoned trees in Alabama, Arkansas, Arizona, California, Colorado, Georgia, and Tennessee.

Sweetpotato weevil eradication and control.--The August work relating to this project was centered principally on enforcement of sanitation measures, which are required by State regulations in the storage and shipping of sweetpotatoes. Surveys for the weevil were continued in infested areas of Alabama, Mississippi, and Texas. Thirteen infestations were reported for the first time from Marion County, Miss. A preliminary survey of two South Carolina counties, with the assistance of a State inspector, resulted in finding no weevils.

Citrus canker eradication.--A summary of citrus canker eradication activities for the past fiscal year shows no new areas of infection. Canker was found recurring on 12 properties in the noncommercial areas of Texas and Louisiana. Through allotments from emergency relief appropriations, abandoned and infested citrus trees to the extent of 2,500,000 have been removed from Louisiana, Texas, Alabama, and west Florida during the year.

Transit-inspection work.--Three hundred thirteen apparent violations of Federal plant quarantines (including violations of intrastate quarantines relating to the Japanese beetle and the gypsy moth) were intercepted in August at transit-inspection points. Forty-five shipments of soil samples from points in the Japanese beetle area, shipped apparently for purposes of analysis, were intercepted at New York and Pittsburgh. A well-closed box of cuttings consigned to a point in Florida without name of sender contained a note to the effect that it was first refused "because of the bug ban." Apples were found in a heavy milk case in a shipment through Boston. The second case in the lot contained milk packed in ice and the absence of dripping water from the apple case lead to investigation. Peaches waybilled and shipped as oranges were also intercepted at Boston. A plant shipment labeled "Clothing" was intercepted at St. Louis. All these shipments were moving in violation of quarantines. They were returned to the senders and reported to field leaders for further investigation.

CONTROL INVESTIGATIONS

Confused flour beetle very resistant to nicotine.--H. H. Richardson and A. H. Casanges, of the Beltsville, Md., laboratory, have found the confused flour beetle (Tribolium confusum Duv.) to be the most nicotine-resistant insect they have yet tested, though few beetles have as yet been tried. Its resistance to nicotine was found to be close to that reported previously by other workers using a similar apparatus. Comparing these results with the results of others working with hydrocyanic acid gas on this insect, nicotine appears to be the more effective. This comparison is on a weight basis. On a molecular basis, the difference is much greater in favor of nicotine. The above comparisons have to do with results on a laboratory scale under the most favorable conditions. Under practical conditions, it is questionable whether a similar difference would appear.

INSECTICIDE INVESTIGATIONS

Process of making dinitro-o-cresol safe for foliage.--The high insecticidal value of dinitro-o-cresol has been known for some time but, because it is very injurious to the foliage of plants, its use is limited to dormant sprays. In an attempt to retain the insecticidal properties of this compound and at the same time to diminish its toxicity to plants, L. E. Smith, of this Division, has made certain derivatives of this compound. The ether of dinitro-o-cresol was patented by Mr. Smith on April 26, 1938 (U. S. Patent 2,115,046). On August 16, 1938, Mr. Smith was granted U. S. Patent 2,127,090, which covers the use as insecticides of esters of dinitro-o-cresol. It is hoped that these derivatives will be less injurious to foliage than was the parent compound.

Another analogue of paris green patented.--On August 16, 1938, F. E. Dearborn was granted U. S. Patent 2,127,380, which covers the use as an insecticide of compounds of copper, arsenic, and unsaturated acids. These compounds are analogous to paris green and it is believed that they will be equally as toxic to insects and at the same time less injurious to plant foliage.

BEE CULTURE

New culture medium for Bacillus larvae.--An easily prepared culture medium for *B. larvae*, which possesses distinct advantage over media previously used in the Bureau, has been devised by E. C. Holst, Laramie, Wyo. For example, growth of *B. larvae* has been obtained with it when the number of spores averaged only 1 per cc, whereas in the past the minimum number to obtain growth in culture has been held to be 50,000 per cc. The way now seems open for making single-spore cultures for pure-strain studies. With the new medium, cultures of *B. larvae* have even been made directly from infected honey, a procedure that points to the development of a simpler and more practicable method than has been used in the past for detecting the presence of this organism in honey.

Continued importance of supersedure problem shown by recent work.--A recent survey by C. L. Farrar, Madison, Wis., emphasizes the importance of the supersedure problem and the necessity of having hardy queens of good stock for use with package bees. Of the queens in 143 packages established by the North Central States Bee Culture Field Laboratory this spring, 2.8 percent were lost during introduction, 3.5 percent failed to lay, 3.5 percent were lost during the first week, 4.9 percent were lost during second to third weeks, 1.4 percent were lost between the fourth and fifth weeks, and 4.2 percent were lost between the sixth and seventh weeks, making a total of 20.3 percent. Of the queens retained in the colonies at the end of the seventh week, those found inferior amounted to 19.6 percent of the original number.

IDENTIFICATION AND CLASSIFICATION OF INSECTS

A new galerucid beetle from sage.--A plentiful and well-preserved alcoholic sample of a chrysomelid beetle defoliating sagebrush (*Artemesia tridentata*) near Aztec, N. Mex., has been received through the Bureau of

Animal Industry. Identified by H. S. Barber as a new species of Trirhabda, this form is of interest because serious injury to sheep browse has been feared from it; because the species seems to be new; and because it exposes our very meager or confused knowledge of the actual species in this group of galerucid beetles, and of their habits, host plants, habitats, and economic significance. Two other species of Trirhabda were described from New Mexico but their exact type localities are unknown, neither of them is properly represented in the National Collection, and the host-plant records ascribed to them require confirmation.

A European cerambycid infesting finished wood in United States.--A beetle recently sent in by J. B. Van Schiver, Market Street Ferry, Camden, N. J., who reported it as having emerged from the woodwork of a living room, has been identified by W. S. Fisher as Stromatium fulvum Villiers. This is one of the European longhorn beetles that, probably distributed by commerce, has been reported at various times from Asia, South America, and the West Indies, but has not been known to have become definitely established in the United States. It is allied to some of the species of Eburia which have been recorded as living for many years in finished wood products.

Blister beetles, the "gray" and the "margined."--There seem to be two very similar margined blister beetles active in the Eastern States, each sometimes appearing in numbers and feeding destructively. Four samples from Clematis near Washington, D. C., were found to be mixtures of a few "all gray" individuals among many "margined" beetles, differing uniformly, however, in certain leg characters from a colony which was defoliating potato and which contained no gray beetles. Miscellaneous preserved samples of such common and supposedly well-known forms rarely are in series or have the host plant data preserved, and the gray form is not well represented in the National Collection. Pure colonies of the gray blister beetle are said to occur and to attack potato. There may be several species involved and the recorded synonymy is known to be erroneous. Single specimens are of little aid in determining specific differences or preferred foods, but group samples from swarms attacking particular kinds of plants are much desired by this Division. These are best killed and submitted in 70-percent alcohol, with full data.

Addition to the collection of nematocerous Diptera.--On returning from Amherst, Mass., recently Alan Stone brought with him 225 specimens of Diptera, mostly Tipulidae, received from C. P. Alexander, of Massachusetts State College. These consist in part of holotypes of species described by Dr. Alexander from National Museum material, but mostly they are paratypes and identified specimens presented for the Museum Collection. More than 100 of the species included were not previously represented here.

Identification of an ant injurious to hops.--Ants, identified by M. R. Smith as Formica fusca L. var., were submitted for determination by H. E. Morrison, Oregon State College. Mr. Morrison reported that the ants were causing damage to hops at both Yakima, Wash., and Hermiston, Oreg.

Another European pine sawfly in the United States.--Specimens from Lamington, N. J., taken in litter under red pine, and submitted by C. W. Collins, of the Division of Forest Insect Investigations, have been determined by Grace A. Sandhouse as *Diprion frutetorum* (F.). This apparently represents the first identification of the species from the United States, although one specimen in the National Museum labeled as being from Ithaca, N. Y., and another from Rye, N. Y., are evidently the same. These were taken in 1931 and at that time were identified by W. Middleton as *Diprion* sp. The species has been known in Canada since 1934, in the Niagara Falls area.

The oriental rat flea in the interior of the United States.--The oriental rat flea (*Xenopsylla cheopis* (Rothschild)), the chief transmitter of bubonic plague to man, has for many years been known to occur in the warmer port cities of the United States but it has been thought that the colder climate of the interior would probably prevent its development there. Nevertheless, in 1934 it was found at Ames, Iowa, and in 1936 at St. Paul, Minn., and H. E. Ewing and Irving Fox now record it from two additional inland and northern localities, namely, Urbana, Ill., and Youngstown, Ohio.

Certain European leafhoppers regular arrivals at U. S. ports.--*Ulopa reticulata* (F.) arrived on schedule again this year. On the basis of material received for determination, P. W. Oman reports that the interception of this leafhopper from the British Isles during August and September, usually on heather, has become an annual occurrence. The ports involved have been New York, Philadelphia, and Boston; the earliest interception, August 15; the latest, September 26. So far as known the species has not become established in North America. A similar, though less regular phenomenon, is the interception of another leafhopper, *Megophthalmus scanicus* (Fall.), on shamrocks from Ireland, just before St. Patrick's Day.

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